

Intelligent Information Processing for Enhanced Safety in the NAS, Phase I

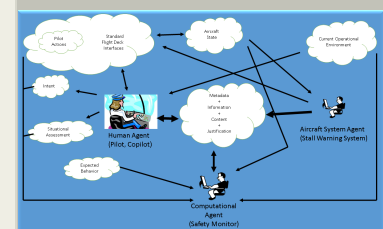
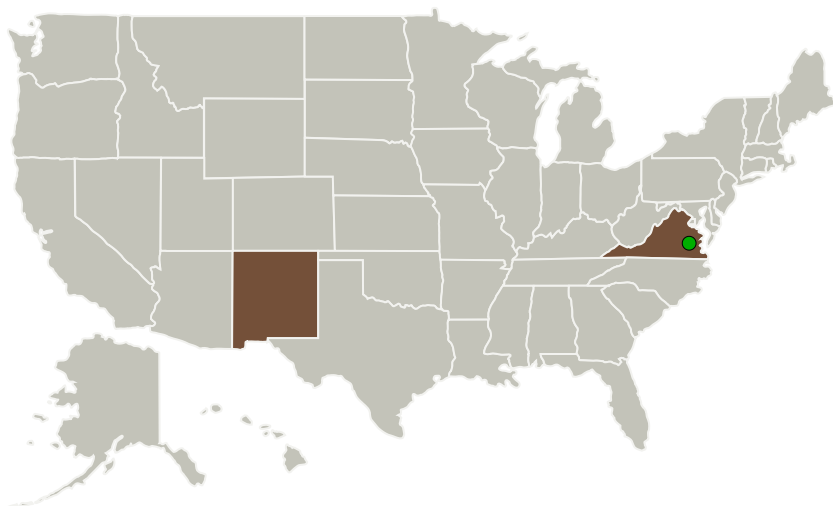
Completed Technology Project (2016 - 2016)



Project Introduction

We propose a system that focuses on how improved information flow between agents acting in a flight deck environment can improve safety performance. Agents are defined as either human, computational, or hardware that can act on information. Information that can flow to an agent is filtered based on priority. This protects human agents from information glut and information overload and reduces bandwidth requirements on communications channels. Agents react to the presented information by accepting it, discounting it, or querying the system for more information. All decisions and actions are recorded and modeled by the system in order to verify correct and efficient processing of information. The proposed system will operate independently of flight deck systems but will have access to required information sources. It will not impose an additional monitoring responsibility on the flight crew except for when safety issues surface. At that point, the flight crew's attention is captured and then predefined, prioritized information is presented in a selected format. The proposed system consists of the major software components: the Metadata Workbench, the Condition Monitor, and the Notification Terminal. The Metadata Workbench is used to identify all agents, roles, conditions of interest which trigger information flows, and information with associated context and priority. The notification mechanism, the information flow's destination, and the format for reporting information along with justification is also defined by the workbench. Condition monitors serve as the interface between information-producing systems and notification terminals. Conditions of interest along with all information metadata are deployed to the condition monitors. The notification terminal receives prioritized information and presents the information in the predefined format.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Metis Technology Solutions, Inc.	Lead Organization	Industry Women-Owned Small Business (WOSB)	Albuquerque, New Mexico
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations

New Mexico	Virginia
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Project Transitions

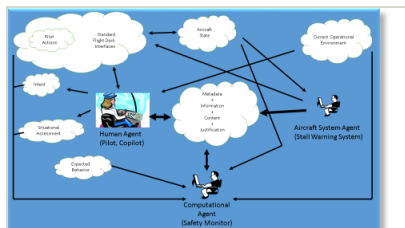
▶ **June 2016:** Project Start

✓ **December 2016:** Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/140044>)

Images



Briefing Chart Image

Intelligent Information Processing for Enhanced Safety in the NAS, Phase I

(<https://techport.nasa.gov/image/132093>)



Final Summary Chart Image

Intelligent Information Processing for Enhanced Safety in the NAS, Phase I Project Image

(<https://techport.nasa.gov/image/126391>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Metis Technology Solutions, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

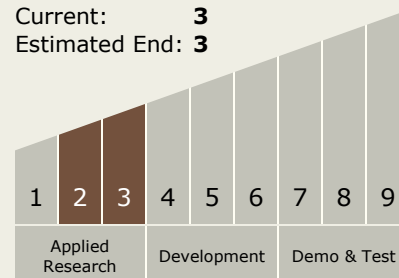
Carlos Torrez

Principal Investigator:

Richard Jessop

Technology Maturity (TRL)

Start: 2
Current: 3
Estimated End: 3



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.1 Software Development, Engineering, and Integrity
 - └ TX11.1.5 Architecture and Design of Software systems

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System